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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/671,423

09/24/2003

George Connors

1870-332

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757 7590 07/25/2007  
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EXAMINER

LIN, ING HOUR

ART UNIT

PAPER NUMBER

1725

MAIL DATE

DELIVERY MODE

07/25/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/671,423

Applicant(s)

CONNORS ET AL.

Examiner

Ing-Hour Lin

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 43-60, 62, 64, 66, 68-76 and 79-86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 43-60, 62, 64, 66, 68-76 and 79-86 is/are rejected.
- 7) ☒ Claim(s) 48, 69-70, 79 and 83 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 48, 69-70, 79 and 83 are objected to because of the following informalities: In claims 48, 69-70, 79 and 83, the screen sizes 6x14, 14x70 and -70 are not well defined in the claims because they are not the conventional dimension unit such as millimeter or micron. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1725

4. Claims 43-47, 49, 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Connors, Jr. in view of Mitkova et al.

Connors, Jr. (col. 2, lines 52+) teaches a slurry composition (casting composition) for a mold, comprising alumina particles with amount of 65-90 wt% and diameter size of 30 micron to 7 mm, silicon carbide with amount of 1-35 wt% and particle size between 30 micrometer and 1.5 millimeters, colloidal silica binder of 8-14 wt%, setting agent such as 0.2 wt.% magnesia and free carbon in the form of graphite of 5 wt%.

Connors, Jr. fails to teach the use of welan gum in the slurry composition. However, Mitkova et al (paragraphs 8+) teach the use of welan gum in a molding material for the purpose of improving instability of the slurry composition (molding material). It would have been obvious to one having ordinary skill in the art to provide Connors, Jr. the use of welan gum as taught by Mitkova et al in order to improve the slurry composition (molding material) instability (Mitkova et al, paragraphs 27+).

5. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Connors, Jr. in view of Mitkova et al as applied to claims 43-47, 49, 51-54 above, and further in view of Schramm.

Connors, Jr. in view of Mitkova et al fails to teach the use of free carbon in the form of pitch or petroleum pitch. However, Schramm (col. 2, lines 39+) teaches the use of free carbon in the form of pitch or petroleum pitch for the purpose of substituting graphite and effectively reducing cost in making a mold. It would have been obvious to one having ordinary skill in the art to provide Connors, Jr. in view of Mitkova et al the use of free carbon in the form

Art Unit: 1725

of pitch or petroleum pitch as taught by Schramm in order to substitute graphite and effectively reducing cost (Schramm, col. 1, lines 60+).

6. Claims 48, 79-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Connors, Jr. in view of Mitkova et al as applied to claims 43-47, 49, 51-54 above, and further in view of Svec.

Connors, Jr. in view of Mitkova et al fails to teach the use of three different sizes of alumina. However, Svec (col. 2, lines 18+) teaches the use of three different sizes of alumina in forming a slurry composition for the purpose of making molds having effectively balance of casting surface quality and mold permeability. It would have been obvious to one having ordinary skill in the art to provide Connors, Jr. in view of Mitkova et al the use of three different sizes of alumina as taught by Schramm in order to make molds having effectively balance of casting surface quality and mold permeability (Svec, col. 2, lines 40+).

7. Claims 55-60, 62, 64, 66, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitkova et al in view of Banerjee et al.

Mitkova et al (paragraphs 8+) substantially teach the claimed lost wax casting method, comprising coating a wax pattern with a dry mix composition including binder, aggregates, carbon, setting agent, stabilizers and polypropylene fibers, wherein the aggregates including alumina and silicon carbide and the stabilizers including polysaccharide gum such as welan gum.

Mitkova et al fails to teach the use of slurry composition including colloidal silica binder. However, Banerjee et al (col. 2, lines 39+) teach the use of colloidal silica binder of 8-14 wt% in

Art Unit: 1725

a slurry composition (casting composition) including silicon carbide of the claimed particle size between 30 micrometer and 1.5 millimeters and weight percent or between 5-25 wt%, larger particle size of alumina of brown fused component between 100 micron and 3 millimeter, free carbon in the form of graphite of 5 wt.%, and setting agent such as 0.2 wt.% magnesia for the slurry composition for the purpose of effectively reducing drying time of 15 minutes to 5 hours at room temperature and reducing cracking in making steel-containment equipment including a casting mold. It would have been obvious to one having ordinary skill in the art to provide Mitkova et al the use of slurry composition including colloidal silica binder as taught by Banerjee et al in order to reduce drying time and reduce cracking in making a mold or steel-containment equipment (Banerjee et al, col. 4, lines 18+).

8. Claims 69, 70-76 and 83-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitkova et al in view of Banerjee et al as applied to claims 55-60, 62, 64, 66, 68 above, and further in view of Svec.

Mitkova et al in view of Banerjee et al fails to teach the use of three different sizes of alumina. However, Svec (col. 2, lines 18+) teaches the use of three different sizes of alumina in forming a slurry composition for the purpose of making molds having effectively balance of casting surface quality and mold permeability. It would have been obvious to one having ordinary skill in the art to provide Mitkova et al in view of Banerjee et al the use of three different sizes of alumina as taught by Schramm in order to make molds having effectively balance of casting surface quality and mold permeability (Svec, col. 2, lines 40+).

Art Unit: 1725

*Response to Arguments*

9. Applicant's arguments with respect to claims 43-60, 62, 64, 66, 68-76 and 79-86 have been considered but are moot in view of the new ground(s) of rejection.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Johnson can be reached on (571) 272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*I.H.L.*

I.-H. Lin

  
JONATHAN JOHNSON  
PRIMARY EXAMINER

7/19/07